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| 09/980,956 | 06/25/2002 | Donald Jafrey | A-71184/DJB/MAK | 3450 |

7590 01/25/2006
Michael A Kaufman
Flehr Hohbach Test
Albritton & Herbert
4th Embarcadero Center Suite 3400
San Francisco, CA 94111-4187

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| EXAMINER |
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CREPEAU, JONATHAN

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| ART UNIT | PAPER NUMBER |
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1746

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/980,956

Applicant(s)

JAFREY, DONALD

Examiner

Jonathan S. Crepeau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-13, 15-20, 22, 23 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22, 23 and 29 is/are allowed.
- 6) ☒ Claim(s) 2-13, 17-20, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 15, 16, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6-13-05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 2-13, 15-20, 22, 23, 25, and newly added claims 26-29. Claims 22, 23, and 29 are allowed and claims 15, 16, 27, and 28 are objected to as containing allowable subject matter. Claims 2-13, 17-19, 25, and 26 are subject to grounds of rejection that are substantially the same as previously presented or that are necessitated by amendment. Claim 20 is newly rejected but the rejection was not necessitated by amendment. Accordingly, this action is non-final.

Claim Rejections - 35 USC § 102

2. Claims 5, 6, 17-19 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Badwal et al (WO 96/28855 or US 5,942,349). The '349 patent is directed to a fuel cell interconnect device comprising a plate (34). The plate comprises a chromium-containing substrate, a chromia protection layer on the cathode side of the substrate, and a metal oxide layer on the surface of the chromia. The chromia layer may comprise copper (see col. 4, line 45) and is thus considered to read on the "layer of copper" recited in claim 25. The metal oxide layer is oxidation resistant and is adjacent the cathode of the fuel cell (see col. 4, line 23). The layer further has a thickness of 1-100 microns (see col. 4, line 17). The substrate per se may be

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considered a “protective layer” as required by claim 25. Furthermore, the substrate may contain alumina (see col. 4, line 31), thereby meeting the subject matter of claims 17-19.

Thus, the instant claims are anticipated.

3. Claims 6, 11-13 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by DE 29807832. The reference is directed to a solid oxide fuel cell interconnect device comprising a plate (8). The plate comprises a chromium-containing substrate and a layer of alumina (32) on the cathode side of the substrate. The alumina layer may contain a further element such as copper in the vicinity of the surface of the substrate. Therefore, this disclosure is considered to anticipate the “layer of copper” of claim 25. The alumina layer further has a thickness of 20-200 microns (see page 6, line 29). The substrate per se may be considered a “protective layer” as required by claim 25.

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

4. Claims 2-7, 20, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reznikov (U.S. Patent 5,232,792) in view of WO 97/35349.

Reznikov is directed to a solid oxide fuel cell (see col. 4, line 63) comprising a separator plate having a stainless steel substrate and a nickel or copper layer thereon facing the anode (see col. 5, line 30).

The reference does not expressly teach that the copper may be alloyed with nickel as recited in claims 4 and 26.

However, it is submitted that the use of such an alloy would have been obvious to a person of ordinary skill in the art. Both nickel and copper are disclosed as useful for the anode-facing layer. The courts have held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. *In re Kerkhoven*, 205 USPQ 1069 (CCPA 1980).

The reference further does not expressly teach a “protective layer” on the anode side of the copper layer as recited in claim 25.

WO ‘349 is directed to an interconnect device having a chromium-containing substrate and an oxidation-resistant coating on the anode side. The coating comprises two layers, the outer layer comprising Ni or a noble metal and the intermediate layer comprising Nb, Ta, Ag, or alloys thereof (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the oxidation resistant coating of WO ‘349 on the anode side of the separator of Reznikov. The artisan would be motivated to do this in order to prevent oxidation of the copper layer of

Reznikov. As such, the anode-side “protective layer” recited in claim 25 would be rendered obvious to the skilled artisan.

Regarding claim 20, which recites a series of three layers forming the protective layer, the disclosure of WO ‘349 would be sufficient to render this subject matter obvious. Claim 20 differs from WO ‘349 in that the claim recites a silver layer between the Nb layer and the Ni outer layer. However, WO ‘349 discloses that its intermediate layer contains Nb, Ta, Ag, or alloys thereof. It would be obvious to separate the single intermediate layer of WO ‘349 into two layers, thereby reading on the claim language. As such, claim 20 would also be rendered obvious.

5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reznikov in view of WO ‘349 as applied to claims 2-7, 20, 25, and 26 above, and further in view of WO 99/13522.

Reznikov does not expressly teach that the steel layer comprises a cathode-side alumina layer thereon, as recited in claims 8 and 9.

WO ‘522 is directed to a fuel cell interconnector. As set forth on page 6, line 6 et seq., the reference teaches that the main body of the interconnector is made of a heat-resisting steel comprising aluminum in a high enough amount to form alumina on the surface of the steel at cell operating conditions, or is coated with a protective coating of alumina.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the heat-resistant steel of WO '522 as the steel layer of Reznikov, or to coat the steel layer of Reznikov with a layer of alumina. At page 6, line 12, WO '522 discloses that this treatment renders the surface impervious to oxygen and chromium-oxide based gases. As such, the artisan would be motivated to use the heat-resistant steel of WO '522 as the steel layer of Reznikov, or to coat the steel layer of Reznikov with a layer of alumina to achieve oxidation resistance. Furthermore, the open face of the layer (1) in Reznikov could subsequently be adjacent to either the cathode or the anode of the fuel cell, thereby rendering these limitations obvious.

Response to Arguments

6. Applicant's arguments filed September 26, 2005 have been fully considered but they are not persuasive. Regarding the Badwal reference, Applicant asserts that the reference does not teach or suggest a "layer of copper or of copper-based alloy containing at least 50 wt% Cu" as recited in claim 25, and that "a layer of copper" means 100% copper. However, it is submitted that the language "a layer of copper" is open-ended and such layer may contain materials other than copper. Applicant is encouraged to amend the claim to recite "a layer consisting of copper" to obviate the rejection.

Allowable Subject Matter

7. Claims 22, 23, and 29 are allowed.
8. Claims 15, 16, 27, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Independent claim 29 defines a gas separator member comprised of a layer of aluminum bronze with layers of alumina on both the cathode and anode sides thereof. The art of record does not teach or fairly suggest this subject matter.

Dependent claim 15 recites that the anode-side protective layer of the gas separator member is heat-resistant steel. The art of record also does not teach or fairly suggest this subject matter.

Conclusion

10. U.S. Patent 5,858,567 to Spear, indicated as an "X" reference on the Supplementary European Search Report, has been considered but has not been applied above as it is considered to be cumulative of the art of record.

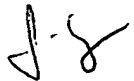
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
January 20, 2006